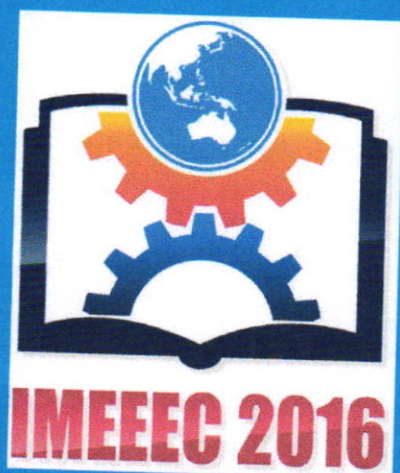


Volume 1778



Conference collection

Proceedings of the International Mechanical Engineering and Engineering Education Conferences (IMEEEEC 2016)



East Java, Indonesia

7-8 October 2016

Editors

Poppy Puspitasari, Heru Suryanto, Avita Ayu Permanasari, Andika Bagus Nur Rahma Putra, Fuad Indra, Duwi Leksono Adi and Ahmad Atiff Fikri

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Table of Contents

Preface: Proceedings of the International Mechanical Engineering and Engineering Education Conferences (IMEEEEC-2016)	010001
PLENARY AND INVITED PAPERS	
Evaluation of CO₂ emission from dye solar cell panel production process Norani Muti Mohamed, Siti Nur Azella Zaine, and Raihan Mahirah Ramli	020001
A study on the interdisciplinary approaches revitalizing higher education institutions: Reflective perspectives in Taiwan Mingchang Wu, Ibnu Siswanto, and Didik Nurhadi	020002
Exploring the potential of municipal solid waste (MSW) as solid fuel for energy generation: Case study in the Malang City, Indonesia Sukarni Sukarni	020003
Transforming engineering education institutions to be learning organizations Syamsul Hadi	020004
CONTRIBUTED ORAL PAPERS	
Flame behavior, emission and mitigation Nyenyp Sriwardani and Basori	030001
The impacts of water capacity and air capacity to condensation temperature in cooling tower Dany Iman Santoso and Bambang Antoko	030002
Improving engine performance with distilled water-methanol Basori and Nyenyep Sriwardani	030003
Effect of ambient temperature on the performance characteristics of automotive air conditioning system using R1234yf and R134a: Energy and exergy-based approaches Mukhamad Suhermanto, Murat Hoşöz, and M. Celil Aral	030004
The effect of angle slope variation and dark light chimney for humidity and temperature full transparent walled dryer chamber Agung Prijo Budijono, Bidya Nur Habib, and Nandha Setiawan	030005
Removal of CO₂ and H₂S from raw biogas using activated natural zeolite Hendry Sakke Tira and Yesung Allo padang	030006
The effect of the electric fields on crystalline structure and functional group of mendong fiber (<i>Fimbristylis globulosa</i>) Heru Suryanto, Yudy Surya Irawan, Rudy Soenoko, Poppy Puspitasari, and Aminnudin	030007

'ENPROD' MODEL – estimating the energy impact of the use of heavy duty construction equipment by using productivity rate	030008
Apif M. Hajji, Muladi, and Aisyah Larasati	
Numerical investigation of heat transfer and fluid flow characteristic of V-corrugated plate solar air collector with prismatic fin as an extended surface	030009
Mohamad Hakam, Djatmiko Ichsani, and Clarissa Suroso	
Processing of porous Mg-Zn-Ca alloy via powder metallurgy	030010
M. Ikhlusal Amal, Dhyah Annur, Franciska P. Lestari, Cahya Sutowo, and Ika Kartika	
Numerical study of aerodynamic analysis on wing airfoil NACA 43018 with the addition of forward and rearward wingtip fence	030011
Setyo Hariyadi S. P., Sutardi, and Wawan Aries Widodo	
Tensile strength differences and type of fracture in artificial aging process of duralium against cooling media variation	030012
Poppy Puspitasari, Dewi Puspitasari, Muhammad Ilman Nur Sasongko, Andoko, and Heru Suryanto	
Development of CNC PU 3A milling Fanuc system intructionals media using flash program in Department of Mechanical Engineering, State University of Malang	030013
Luchyto Chandra Permadi, Dewi Izzatus Tsamroh, Devita Maulina Putri, Poppy Puspitasari, and Widiyanti	
A preliminary analysis on development design of mini boiler for tofu industry	030014
Moeso Andrianto, Fahriansyah, and Umi Hanifah	
Analysis of 6-DOF robot trajectory planning for spray coating application based on workpiece orientation using blender open source software	030015
Arif Santoso, Budi Prawara, and Roni Permana Saputra	
Predicting level of waste and cost reduction using integration of dynamic and agent based model	030016
Issa Dyah Utami	
Effect of shape variation on feeding efficiency for local exothermic-insulating sleeve	030017
Wiwik Purwadi, Dewi Idamayanti, Cecep Ruskandi, and Jaenudin Kamal	
The carbon monoxides reduction and temperature profile of palm shell and palm fiber combustion in fluidized bed combustor	030018
A. Rosyida Permatasari and Mohd Jaafar Mohammad Nazri	
The improvement of crankshaft mechanical properties by homogenous bainitic structure formation through silicon alloying	030019
Beny Bandanadjaja, Noval Lilansa, Iwan Harianton, and Ayi Ruswandi	
Numerical analysis on the effect of longitudinal and transversal pitch ratio to the flow and heat transfer characteristic of staggered elliptical tubes-bank	030020
Budi Utomo Kukuh Widodo and Safrida Dyah Hanifah	

Thermodynamic study on a combined cycle power plant of 500 MW under various loads using Cycle-Tempo Budi Utomo Kukuh Widodo and Rijal Fathoni	030021
Effects of alkaline treatment and fiber length towards the static and dynamic properties of ijuk fiber strengthened-epoxy composite I. G. N. Nitya Santhiarsa	030022
Improving the physical properties of asphalt concrete wearing course using latex DRC60 Henri Siswanto	030023
Implementation of project based learning model in mechanical machining skills package of vocational high school Dwi Agus Sudjimat	030024
Mechanical properties of geopolymer paste with fly ash variation Puput Risdanareni, Poppy Puspitasari, Dessy Kartika, and Boedya Djatmika	030025
The effect of biocomposite variation composition on thermal characteristic and cross-sectional structure as alternative material plastic product Dinny Harnany, I. Made Londen Batan, Arif Wahjudi, and Mutaawwiyin Rizqoni Ardiansyah	030026
The structure of bioplastic from cassava starch with nanoclay reinforcement Heru Suryanto, Prihanto Tri Hutomo, Reza Wanjaya, Poppy Puspitasari, and Sukarni	030027
The influence of dynamic vibration absorber to reduce the vibration of main system with 2-DoF Aida Annisa Amin Daman, Harus Laksana Guntur, and Susastro	030028
Lightweight foamed concrete for prefabricated house Puput Risdanareni, Mohammad Sulton, and Syahidah F. Nastiti	030029
Design of integrated wheel slip-skid factor and vehicle side slip angle using mamdani fuzzy control Herman M. Kaharmen, Djoko Kustono, Waras Kamdi, Tuwoso, and Poppy Puspitasari	030030
Designing a balanced scorecard model to evaluate strategies of engineering educational institution Didik Nurhadi	030031
Correlation between creative thinking skill and competency achievement with vocational maturity on vocational high school Lativa Hartiningtyas, Purnomo, Hakkun Elmunsyah, and Riana Nurmallasari	030032
Skills of vocational high school graduation on building construction program competence of stone and concrete construction technique which is required for construction industry Diny Almira, Ahmad Dardiri, and Isnandar	030033
Pocket book learning: Learning methods to train students productive and creative using 'BRANO' as an effective learning recorder Andika Bagus Nur Rahma Putra, Windra Irdianto, Amat Mukhadis, and Syarif Suhartadi	030034

Production unit as edupreneurship, cooperation business and industrial world with the school for the development of vocational student entrepreneurship mindset Arif Firdausi Ananda and Amat Mukhadis	030048
The level of students' employability skills department automotive engineering education state University of Makassar Darnawang, Haris Anwar Syafrudie, Tuwoso, and Muhammad Yahya	030049
Entrepreneurial character development model: Responsible and discipline integrated in business plan based learning project Any Sutiadiningsih, A. Sonhadji K.H., Eddy Sutadji, and Luthfiah Nurlaela	030050
The contribution of industry to the development of SMK through teacher internship program in the industry Sutijono	030051
Work-based learning for enhancing the capacity of engagement: Lesson from stakeholders perspective literature Windra Aini, Djoko Kustono, Ahmad Dardiri, and Waras Kamdi	030052
Entrepreneurship motivation of vocational high school student Marniati	030053
Effects of stad and intelligence type cooperative learning method toward english hospitality study result in academy of tourism in medan Abdul Kadir Ritonga, Amat Mukhadis, Syamsul Hadi, and Dany M. Handarini	030054
Various aspects affecting work quality of medan tourism academy graduates Sumihar Sebastiana Sitompul, Djoko Kustono, and Syarif Suhartadi	030055
Hotel system learning for SMK students of hospitality accommodation study program Muhammad Halfi Indra Syahputra, Mardji, Dwi Agus Sudjimat, and Sitti Raha Agoessalim	030056
The implementation of constructivism approach for physics learning in vocational high school Tuwoso	030057
The development of instructional materials mechanics of materials using solidworks simulation software Widiyanti, Poppy Puspitasari, and Agus Suyetno	030058
The e-learning and computer based instruction in engineering education: The case study in Tanzania Paul Machumu	030059
Improving the quality and competence of technical vocational education and training output through vocational school cooperation with industry: A case study of Uganda Kirya Mateeke Moses	030060
The influence of education and economic background towards the training participants' motivation and study result of UPT-PK Singosari Malang Windra Irdianto and Andika Bagus Nur Rahma Putra	030061

Metallurgical aspects of process changing for commercial C-Mn steel into dual phase steel for automotive materials	
Prita Dewi Basoeki	030062
Hydrogen permeation of iron caused by atmospheric corrosion	
Sri Hastuty and Hideki Katayama	030063
Finite element analysis of surface tension on piston due to pressure variation	
Andoko and Poppy Puspitasari	030064
Characteristics of leaf spring strength of material 65si7 and material C17000 using finite element method	
Andoko and Poppy Puspitasari	030065
Online monitoring cutting tool wear using audio signal	
Ahmad Atif Fikri and Avita Ayu Permanasari	030066
Optimization design of Goose-Leg waterwheel next-G to extract energy of free water flow	
Retno Wulandari, M. Alfian Mizar, Andoko, and Avita Ayu P.	030068
The mastery of competencies the skills students of SMK reviewed from the talent, creativity and intrinsic motivation of students	
Ratri Martyasari, Hary Suswanto, and Sukarnati	030069
Use procedures tricycle for physical rehabilitation of stroke patients	
I. Made Londen Batan, Dwi Anis Kusuma Wardani, and Heri Luthfiyanto	030070

Preface: Proceedings of the International Mechanical Engineering and Engineering Education Conferences (IMEEEEC-2016)

The International Mechanical Engineering and Engineering Education Conferences (IMEEEEC 2016) has been scheduled to take place at Atria Hotel and Convention Centre, Malang, East Java, Indonesia on 7th and 8th October 2016.

The objective of the conference is to serve as the confluence point between experts in the field of mechanical engineering and engineering education to present their up-to-date research and works in areas pertaining to sustainable future. The event will be an ideal platform among the participants to interchange novel concepts and latest discoveries around the globe, providing groundwork for future linkages between research and education.

This conferences consist of two main event which are:

1. International Mechanical Engineering Conference (IMEC 2016)
2. International Engineering Education Conference (IEEC 2016)

The accepted papers were divided among the following five categories: Materials, Manufacture, Energy, Construction, and Education.

Finally, we would like to thank:

- The entire Committee of IMEEEC 2016 for their help and support
- Engineering Faculty of Universitas Negeri Malang for the support for IMEEEC 2016.
- The distinguished invited speakers for their acceptance to give keynote lectures on their respective fields of expertise.
- The participants of IMEEEC 2016 for their contribution and sharing knowledge.
- The sponsors for cooperation and their consideration to support IMEEEC 2016.

The Level of Students' Employability Skills Department Automotive Engineering Education State University of Makassar

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Abstract. This study aims to determine the level of employability skills of students Department of Automotive Engineering Education, State University of Makassar, which is viewed from the aspect of employability skills are the ability to: (1) work together, (2) solve the problem, (3) initiatives, (4) management capabilities, and (5) information technology. The research sample consisted of 69 students from class years 2012-2014 were randomly selected using random cluster sampling technique. Analysis of survey data using descriptive analysis techniques which include: average, standard deviation, and frequency distribution category. The results showed that the level of employability skills of students Department of Automotive Engineering Education, State University of Makassar not optimal. This is evident from the average score of each sub-variables: (1) work together amounted to 44.93% of the students were in the high category, (2) solve the problem only 46.38% were in the high category, (3) an initiative of 42.02% are in a high, (4) management capabilities 49.27% were in the high category, and (5) information technology and 40.58% of the students were in the high category. While the results of tests technical skills of students only 36.23% are in the category is quite high. Thus, the implementation and the development of learning-based employability skills within the Department of Automotive Engineering Education, State University of Makassar still need to be optimized in order to produce graduates with employability skills that synergize with hard skills optimally viewed from the aspect of cooperation, problem-solving, initiative, self-management, and information technology.

INTRODUCTION

The development of industrial society today has implications for the increasing number of jobs that require workers with specific vocational skills. Vocational skills are skills which contains technology skills and job skills that can be organized through college. Hanafi. [1] States to make human resources in the industry to have adequate knowledge and skills appropriate employment standards, much depends on the quality of education.

The main requirements for the development of technology in the modern era such as the people have the education and technical and vocational training so easily mobilized to meet the changing technology [2]. The primary example of this is seen in technology and industry in Japan. Education and technical and vocational training is regarded as a vehicle for the development of marketable skills and entrepreneurship as well as an engine for development [3]. The human resource development needs to be further enhanced to support economic development through productivity. This means that the economy-oriented vocational education is an important pillar in the survival of a nation.

A key factor in the development and economic competition, even social stability in many countries, including developed countries is vocational education [1]. For example, to meet the needs of economic development, China actively involved in global cooperation and exchanges in the field of vocational education. The Chinese government

has sent delegations to over 20 countries including: Australia, Germany, Canada, and the United States only to develop vocational education [4].

Other examples of key economic progress is the development of technology and industry in Japan. Education and vocational training in Japan is considered as a vehicle for the development of marketable skills and entrepreneurship as well as an engine for economic development [3]. Similar disclosed Agrawal. [5] that the experience of Japan as an industrial center in the East Asia region with a relatively low unemployment rate and high rate of economic growth, because people have a vocational technology skills.

Results of research conducted Vachhani. [6] revealed that the hard skills to contribute only 15% of a person's success, while the remaining 85% is contributed employability skills. Similarly, the results of research [7] found that large companies that have more than 200 employees put more emphasis on employability skills compared to small companies with fewer than 200 employees. Research results [8] shows that the competence of graduates needed the business industrial amounted to 58.21%, which is more likely in the aspect of communication, initiative and enterprise, as well as the ability to work as a team, while the mastery of technical skills (technical skills) only amounted to 47.37% with the more forward the tasks associated with computerization and digital compared to the tasks that are manual. This means that the industrial world today is more expensive and give priority to workers who have high employability skills, although hard skills remains a priority.

Competency of employability skills is considered very important, because the characteristics of the work requires initiative, flexibility, and ability to handle different tasks [1]. Employability skills is an aspect of the job competencies that should be known and shared by all the workforce so skilled and able to explore the business industry [9]. Meanwhile, students of undergraduate and diploma of three courses department in Automotive Engineering Education State University of Makassar as individuals and objects of the learning process of vocational education should be able to develop their full potential to succeed academically and technically and succeeded in building their careers in the workplace later in life after graduation.

This study aimed to examine the relationships that exist between learning systems in the context of vocational education and the learning environment is associated with the development of their own potential and competence of employability skills of students. The results of this study are expected to be a cornerstone in the development of students through intervention on the determinants that empirically influential in the development of employability skills of students. Therefore, in addition to technical skills in the field, students are also expected to have skills that are generic and can be transferred into the various fields of work through employability skills.

Carney. [10] states that the industry in the era of knowledge-based economy requires workers who are able to manage themselves, work together in teams, adapt to change, solve problems, and to think creatively and innovatively. While the demands of competencies essential for entry into the workplace, namely: identifying sources of private, personal relationships are effective, acquire and use information, apply the technology varies, reading, writing and speaking, thinking skills, and personal qualities to develop positive feelings for himself and others. However, that will be studied in this research is limited to five competencies essential as employability skills, namely: (1) the ability to work together, (2) solve the problem, (3) initiatives, (4) the ability of management, and (5) technology and information.

LITERATURE

Employability Skills

Employability skills is one aspect of the skills that need to be considered and assessed. Employability skills is one aspect of the job competencies that should be known and possessed by every worker to enable the workforce is really skilled and highly skilled in the business industry. Billing. [11] suggests that job skills can be transferred and can be used in various situations. Robinson. [12] defines occupational skills as basic skills necessary to obtain, maintain and perform well on the job. Hartshorn. [13] Argues that the skill work is a series of skills necessary to compete in the labor market is much more flexible. While Lankard. [14] presupposes that the basic work skills and generic by nature and help everyone in the workforce. The above definition refers to the non-technical skills that can be applied across many different job or profession.

Types of Employability Skills

Lankard. [14] States employability skills as a skill that consists of several aspects, namely: personal skills, interpersonal skills, attitudes, habits and behaviors. Employability skills consist of three (3) groups of skills, namely: (1) the basic skills (2) high-level thinking skills (3) Character and affective skills. Further [12] stated employability skills consist of three groups of skills that include: (1) basic academic skills, (2) higher-order thinking skills, and (3) personal qualities.

Basic skills consisting of (a) verbal communication skills (speaking and hearing/listening), (b) to read (especially understand and can follow the flow of thought), (c) mastering the basics of arithmetic, and (d) skilled writing. High-level thinking skills include (a) solving problems, (b) strategy and skill learning, (c) innovative and creative thinking, and (d) make a decision. Characters and skills affective include (a) responsibilities; (b) a positive attitude towards work; (c) honest, careful, thorough, and efficient; (d) personal relationships, cooperation, and work in teams, (e) confidence and have a positive attitude toward myself, (f) adjustment and flexible, (f) full of enthusiasm and motivation, (g) discipline and self-control, (h) dress up and look attractive, (i) honest and have integrity, and (j) is able to work independently without supervision [15].

Technical Skills are Automotive Students

Implementation of vocational education in the Automotive Engineering Education State University of Makassar students are part of the economic sectors that drive national economic growth so it is necessary to develop the quality and quantity. The quality of students will reflect on the quality of Indonesian workers that need to be built to increase the forte-competitive human resources (HR). Department of Automotive Engineering Education as an institution of vocational education is the motor of economic and social ma-society. Department of Automotive Engineering Education is expected to create a double effect of encouraging educational attainments of citizens (students) through the attainment of technical skill, as well as contribute directly to economic growth.

In addition, three theories that support learning in vocational education in the opinion of [16] namely: (1) Education Vocational effective can only be granted if the task of the exercise is done in a way, the tools, and the same machine as which is applied in the workplace. (2) Vocational education will be effective if people are trained direct and specific. (3) Fostering effective work habits to students would happen only if the training and learning will involve real work and not just exercise.

RESEARCH METHODS

This research is a descriptive study that aims to uncover the employability skills of students Department of Automotive Engineering Education of State University of Makassar as supporting technical skills in terms of aspects of cooperation, problem-solving, initiative, self-management, and technology and information. This research was conducted in the Department of Automotive Engineering Education. Subjects were students of the programs undergraduate and diploma that active college in the second semester of academic year 2014/2015, with the following criteria: (1) programs for at least three subjects practices, (2) following the lecture at least 80%, and (3) an active work group tasks.

The variables studied in this research is the employability skills of students in terms of aspects employability skills covering aspects: (1) collaboration, (2) solving problems, (3) initiatives, (4) self-management, and (5) and information technology. To gather the necessary data in order to answer the research problem, used questionnaires, observations, and tests. To analyze the necessary data in order to address concerns and questions research used descriptive analysis include (a) the percentage and (b) the category of research variables.

RESULTS AND DISCUSSION

As explained in previous discussions, that the focus of this study is related to the level of employability skills of department students in Automotive Engineering Education State University of Makassar as supporting technical skills technical skills automotive sector include: (a) the capability of cooperation, (b) the capability to problems solving, (c) the capability initiative, (d) aspects of capability self-management, and (e) the capability of technology and information.

TABLE 1. Category employability skills Students viewed from aspects of cooperation capability

Category Employability skills of students	Number	Percentage (%)
Very high	19	27,54
High	31	44,93
Low	14	20,29
Very low	5	7,25

TABLE 2. Category employability skills students viewed from aspects of problem solving ability

Category Employability skills of students	Number	Percentage (%)
Very high	17	24,64
High	32	46,38
Low	13	18,84
Very low	7	10,14

TABLE 3. Level Student Employability Skills in terms of initiative capability

Category Employability skills of students	Number	Percentage (%)
Very high	12	17,39
High	29	46,38
Low	20	28,98
Very low	8	11,59

TABLE 4. Category Employability Skills students from the aspect of self-management capabilities

Category Employability skills of students	Number	Percentage (%)
Very high	12	17,39
High	34	49,27
Low	15	21,73
Very low	8	11,59

TABLE 5. Category Employability Skills Students from the aspect of information technology capabilities

Category Employability skills of students	Number	Percentage (%)
Very high	20	28,99
High	28	40,58
Low	12	17,39
Very low	9	13,04

TABLE 6. Distribution frequency test results technical skills of students

Category value of student performance	Interval values	Number	Percentage (%)
High	85,0 – 100	20	28,99
High enough	70,0 – 84,9	25	36,23
Less	55,0 – 69,9	16	23,19
Low	40,0 – 54,9	8	11,59

CONCLUSION

Based on the data presentation of research results that have been described previously, formulated some conclusions about the employability skills of students in the Department of Automotive Engineering Education State University of Makassar as follows:

- Students have high levels of employability skills as supporting the automotive field of technical skill level of the highest level to the lowest for very high category respectively: (a) the ability of information technology, (b) the ability of cooperation, (c) the ability to solve problems, (d) the ability of the initiative, and (e) the ability of self-management.
- Students have the level of employability skills as a support level of technical skills from the automotive field the highest level to lowest level to the high category respectively: (a) the ability of self-management, (b) the ability to solve problems, (c) the ability to work together, (d) the ability of the initiative, and (e) the ability of information technology.
- Students have the level of employability skills as a support level of technical skills from the automotive field the highest level to the level of the lowest low for each category: (a) the ability of the initiative, (b) the ability of self-management, (c) the ability of cooperation, (d) the ability to solve the problem, and (e) the ability of information technology.

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